Creating a Calibration Curve – Delmhorst Meter

Lab Guide

Task

To create a calibration curve

What You Need

❏ Pen or pencil

❏ Graph paper or appropriate spreadsheet graphing software

❏ *Biannual Soil Moisture Sensor Calibration Data Sheet* with 15 or more pairs of readings for each depth for which you are developing a calibration curve

❏ Calculator or computer

In the Lab

1. Plot all the pairs of readings for a single depth with soil water content on the Y-axis and the corresponding soil moisture meter readings on the X-axis. This can be done using a spreadsheet software.

2. Draw or calculate the *best-fit second order polynomial curve* through your data points.

$$\text{Soil Water Content} = a \bullet e^{b \bullet \text{meter reading}}$$

   Your data should span a broad range of soil moistures. This will be your calibration curve, which you will use to convert your meter readings to soil water content values.

   Note: If you have any questions about creating your calibration curve or if you need any assistance with the curve, contact the GLOBE Help Desk or your country coordinator and ask for help from the appropriate GLOBE scientist.

3. Mail or email a copy of your curve and of your corresponding *Biannual Soil Moisture Sensor Calibration Data Sheet* to GLOBE following the directions for submitting maps and photos given in the *How to Submit Photos and Maps* section of the *Appendix* of the *Implementation Guide*. If while taking soil moisture measurements you get meter readings either higher or lower than any of the readings on your data sheet, take a gravimetric sample, and use the values you measure for this sample to extend your calibration curve. Send a copy of your revised calibration curve and extended *Biannual Soil Moisture Sensor Calibration Data Sheet* to GLOBE.

Example of a Soil Moisture Sensor Calibration Curve for a Delmhorst Meter

Calibration Curve - Delmhorst Meter

soil water content = $0.0191e^{0.0304 \text{ meter reading}}$

Y-axis: Soil Water Content (g/g), ranging from 0.00 to 0.40

X-axis: Meter Reading, ranging from 0 to 100